## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims **1, 13, 31-33, 43-44, 59-60, 63-64, 69-71 and 76** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,135,608 to Okutani in view of U.S. Patent No. 4,405,487 to Harrah et al., U.S. Patent No. 6,001,413 to Matsuura et al. and U.S. Patent No. 4,322,230 to Schoen et al.

3. Regarding claims 1, 13 and 59: Okutani et al. disclose a film deposition apparatus substantially as claimed in Figures 6 and 35, comprising: a stock chamber (601) for loading or unloading a substrate; a transferring chamber (634) including a mechanism (637) for transferring the substrate; a liquid phase film deposition chamber (614) connected to said transferring chamber through a gate (622); and a calcining chamber (624). The apparatus may be used for depositing material in the liquid phase (column 12, row 66 through column 13, row 10). Further, the liquid phase deposition chamber is provided with a third mechanism (392) for pressurizing with an inert atmosphere; and a fourth mechanism (395) capable of supplying an organic material including solvent, wherein the liquid phase film deposition chamber is capable of being filled with an inert gas during deposition process. With respect to the specific material

supplied by the forth mechanism, it is noted that the courts have ruled that Examiner notes that the courts have ruled that expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim. Ex parte Thibault, 164 USPQ 666, 667 (Bd. App. 1969). Also, with respect to an intended use of the apparatus (i.e. a specific type of deposition film produced), it is note that the courts have ruled that claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. In re Danly, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). The courts have further ruled that a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

4. Although, the liquid phase film deposition chamber of Okutani is not provided with a mechanism for oxidizing an element belonging to Group 1 or 2 of the periodic table. It is noted that Okutani do teach that coatings such as the one deposited in the liquid film deposition chamber may develop defects such as "swelling" or "voids" when exposed to open air comprising water (e.g., see column 20, rows 9-12).

5. Harrah et al. teach the use of a moisture getter comprising a readily oxidizable metal (such as Mg, a Group 2 metal; column 2, row 68) in a closed container for the purpose of scavenging moisture (column 1, rows 11-14).

6. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a mechanism for oxidizing an element

belonging to Group 1 or Group 2 of the periodic table in Okutani in order to scavenge moisture within the liquid phase deposition chamber as taught by Harrah et al.

7. Harrah et al. and Okutani disclose the invention substantially as claimed and as described above.

8. However, Harrah et al. and Okutani do not explicitly teach why one of ordinary skill in the art might combine two apparatus that to some may appear to individually provide solutions to a common problem.

9. Matsuura et al. teach that even when substrates are provided in a vacuum enclosure, over time contaminants and impurities may be introduced into the enclosure, thus causing failure or destabilization of the substrates (column 2, rows 17-35). Therefore, even if at some point in time the apparatus of Okutani is in a "clean" state, over time this state may become diminished. Thus, means for addressing the contaminants and/or impurities besides just providing a clean container at the outset would make sense. Examiner recognizes that the disclosure of Matsuura states that even when substrates are provided in a *vacuum* (i.e. an air tight enclosure) contaminants and impurities may be introduced and points out that if this is the case, even more care would have to be taken in an environment not under vacuum to prevent contaminants and impurities from causing failure or destabilization.

10. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided the apparatus/closed container of Okutani with a mechanism for oxidizing an element belonging Group 1 or 2 of the

periodic table in order to scavenge moisture from the chamber that may be introduced after time has lapsed as taught by Harrah et al. and Matsuura et al.

11. Further, with respect to the disclosure of Matsuura et al., Examiner points out that Matsuura et al. teach that this prevention of failure and destabilization is applicable to electroluminescent coatings (see, e.g., abstract).

12. Okutani, Harrah et al. and Matsuura et al. disclose the invention substantially as claimed and as described above.

13. However, Okutani, Harrah et al. and Matsuura et al. fail to teach mechanism for oxidizing is an oxidation cell having a lid, wherein said oxidation cell is capable of being airtight when said lid is closed and wherein a period of time in which said oxygen getter agent is oxidized is adjusted by opening and closing said lid.

14. Schoen et al. teach providing a gettering material in a cell with a lid such that when said lid is closed said cell is airtight (i.e. hermetic) for the purpose of allowing for storage when the cell is not needed and therefore enabling adjustment of a period of time in which said gettering material is used (column 2, rows 26-30 and column 3, rows 43-51).

15. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided the gettering material in a cell with a lid for opening and closing the cell in Okutani, Harrah et al. and Matsuura et al. in order to allow for storage when the cell is not needed and adjustment of a period of time in which said gettering material is used as taught by Schoen et al.

16. With respect to claims 31, 60, 63-64, 69-71 and 76 which are drawn solely to an intended use of the apparatus, refer to above rejections for treatment of the specific intended use and materials used during such treatment.

17. With respect to claims 32-33, 43-44 and 61-62, the liquid phase film deposition chamber of Okutani et al. is a spin coater provided with a nozzle (see, e.g., column 19, rows 24-41). Refer to above rejections for treatment of the specific intended use and materials used during such treatment.

18. Claims **2 and 14** are rejected under 35 U.S.C. 103(a) as being unpatentable over Okutani, Harrah et al. and Matsuura et al. and Schoen et al. as applied to claims 1, 13, 31-33, 43-44, 59-60, 63-64, 69-71 and 76 above, and further in view of U.S. Patent No. 5,310,410 to Begin et al.

19. Okutani, Harrah et al. and Matsuura et al. and Schoen et al. disclose the invention substantially as claimed and as described above.

20. However, Okutani, Harrah et al. and Matsuura et al. and Schoen et al. fail to teach an apparatus wherein an inside of said transferring chamber is kept under a reduced pressure and a liquid phase film deposition chamber is kept under atmospheric pressure or in a pressurized state.

21. Begin et al. disclose a multi-chamber apparatus in Figures 1 and 4, wherein each of the chambers (including the transfer chambers) are kept at a pressure selected based upon the particular process to be performed in the chamber for the purpose of

providing a system with increased flexibility (column 1, rows 52 through column 2, row 18; column 4, rows 15-35).

22. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided individual chambers with pressures selected based on the processes to be performed in Okutani, Harrah et al. and Matsuura et al. and Schoen et al. in order to provided a system with increased flexibility as taught by Begin et al.

23. Claims **3 and 15** are rejected under 35 U.S.C. 103(a) as being unpatentable over Okutani, Harrah et al. and Matsuura et al. and Schoen et al. as applied to claims 1, 13, 31-33, 43-44, 59-60, 63-64, 69-71 and 76 above, and further in view of U.S. Patent No. 3,931,789 to Kakei et al.

24. Okutani, Harrah et al. and Matsuura et al. and Schoen et al. disclose the invention substantially as claimed and as described above.

25. However, Okutani, Okutani, Harrah et al. and Matsuura et al. and Schoen et al. fail to teach that said calcining chamber is provided with a mechanism for turning said substrate upside down.

26. Kakei et al. disclose a heating chamber provided with a mechanism for turning a substrate upside down for the purpose of facilitating successive applications of thin film coating on opposite surfaces of substrates (abstract).

27. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a calcining (heating) chamber with a

turning mechanism in Okutani, Harrah et al. and Matsuura et al. and Schoen et al. in order to facilitate successive applications of thin film coating on opposite surfaces of substrates as taught by Kakei et al.

28. Claims **4, 34-36, 66 and 73** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,135,608 to Okutani, in view of U.S. Patent No. 4,405,487 to Harrah et al., U.S. Patent No. 6,001,413 to Matsuura et al. and in view of U.S. Patent No. 6,149,392 to Conte and U.S. Patent No. 4,322,230 to Schoen et al.

29. Regarding claim 4: Okutani et al. disclose a film deposition apparatus substantially as claimed in Figures 6 and 35, comprising: a stock chamber (601) for loading or unloading a substrate; a transferring chamber (634) including a mechanism (637) for transferring the substrate; a liquid phase film deposition chamber (614) connected to said transferring chamber through a gate (622); and a calcining chamber (624). The apparatus may be used for depositing material in the liquid phase (column 12, row 66 through column 13, row 10). Further, the liquid phase deposition chamber is provided with a third mechanism (392) for pressurizing with an inert atmosphere; and a fourth mechanism (395) capable of supplying an organic material including solvent, wherein the liquid phase film deposition chamber is capable of being filled with an inert gas during deposition process. With respect to the specific material supplied by the forth mechanism, it is noted that the courts have ruled that Examiner notes that the courts have ruled that expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus

claim. Ex parte Thibault, 164 USPQ 666, 667 (Bd. App. 1969). Also, with respect to an intended use of the apparatus (i.e. a specific type of deposition film produced), it is note that the courts have ruled that claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. In re Danly, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). The courts have further ruled that a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

30. Although, the liquid phase film deposition chamber of Okutani is not provided with a mechanism for oxidizing an element belonging to Group 1 or 2 of the periodic table. It is noted that Okutani do teach that coatings such as the one deposited in the liquid film deposition chamber may develop defects such as "swelling" or "voids" when exposed to open air comprising water (e.g., see column 20, rows 9-12).

31. Harrah et al. teach the use of a moisture getter comprising a readily oxidizable metal (such as Mg, a Group 2 metal; column 2, row 68) in a closed container for the purpose of scavenging moisture (column 1, rows 11-14).

32. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a mechanism for oxidizing an element belonging to Group 1 or Group 2 of the periodic table in Okutani in order to scavenge moisture within chamber as taught by Harrah et al.

33. Harrah et al. and Okutani disclose the invention substantially as claimed and as described above.

34. However, Harrah et al. and Okutani do not explicitly teach why one of ordinary skill in the art might combine two apparatus that to some may appear to individually provide solutions to a common problem.

35. Matsuura et al. teach that even when substrates are provided in a vacuum enclosure, over time contaminants and impurities may be introduced into the enclosure, thus causing failure or destabilization of the substrates (column 2, rows 17-35). Therefore, even if at some point in time the apparatus of Okutani is in a "clean" state, over time this state may become diminished. Thus, means for addressing the contaminants and/or impurities besides just providing a clean container at the outset would make sense. Examiner recognizes that the disclosure of Matsuura states that even when substrates are provided in a *vacuum* (i.e. an air tight enclosure) contaminants and impurities may be introduced and points out that if this is the case, even more care would have to be taken in an environment not under vacuum to prevent contaminants and impurities from causing failure or destabilization.

36. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided the apparatus/closed container of Okutani with a mechanism for oxidizing an element belonging Group 1 or 2 of the periodic table in order to scavenge moisture from the chamber that may be introduced after time has lapsed as taught by Harrah et al. and Matsuura et al.

37. Further, with respect to the disclosure of Matsuura et al., Examiner points out that Matsuura et al. teach that this prevention of failure and destabilization is applicable to electroluminescent coatings (see, e.g., abstract).

38. Okutani, Harrah et al. and Matsuura et al. disclose the invention substantially as claimed and as described above.

39. However, Okutani, Harrah et al. and Matsuura et al. fail to teach said oxidizing mechanism provided via a piping.

40. Conte discloses multiple chamber and getter (oxidizing mechanism) configurations in Figures 5-7, including a configuration where the getter is connected to the chamber via piping. Conte further discloses that ideally particles of getter material are prevented from moving through the chamber (column 5, rows 51-65).

41. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a getter connected to a chamber via piping in Okutani, Harrah et al. and Matsuura et al. in order to prevent particles of getter material from moving through the chamber as taught by Conte.

42. Okutani, Harrah et al. and Matsuura et al. and Conte disclose the invention substantially as claimed and as described above.

43. However, Okutani, Harrah et al., Matsuura et al. and Conte fail to teach mechanism for oxidizing is an oxidation cell having a lid, wherein said oxidation cell is

capable of being airtight when said lid is closed and wherein a period of time in which said oxygen getter agent is oxidized is adjusted by opening and closing said lid.

44. Schoen et al. teach providing a gettering material in a cell with a lid such that when said lid is closed said cell is airtight (i.e. hermetic) for the purpose of allowing for storage when the cell is not needed and therefore enabling adjustment of a period of time in which said gettering material is used (column 2, rows 26-30 and column 3, rows 43-51).

45. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided the gettering material in a cell with a lid for opening and closing the cell in Okutani, Harrah et al., Matsuura et al. and Conte in order to allow for storage when the cell is not needed and adjustment of a period of time in which said gettering material is used as taught by Schoen et al.

46. With respect to claims 34, 66 and 73, which are drawn solely to an intended use of the apparatus, refer to above rejections for treatment of the specific intended use and materials used during such treatment.

47. With respect to claims 35 and 36, the liquid phase film deposition chamber of Okutani et al. is a spin coater provided with a nozzle (see, e.g., column 19, rows 24-41). Refer to above rejections for treatment of the specific intended use and materials used during such treatment.

48. Claim **5** is rejected under 35 U.S.C. 103(a) as being unpatentable over Okutani, Harrah et al., Matsuura et al., Conte and Schoen et al. as applied to claims **4, 34-36, 66 and 73** above, and further in view of U.S. Patent No. 5,310,410 to Begin et al.

49. Okutani, Harrah et al., Matsuura et al., Conte and Schoen et al. disclose the invention substantially as claimed and as described above.

50. However, Okutani, Harrah et al., Matsuura et al., Conte and Schoen et al. fail to teach an apparatus wherein an inside of said transferring chamber is kept under a reduced pressure and a liquid phase film deposition chamber is kept under atmospheric pressure or in a pressurized state.

51. Begin et al. disclose a multi-chamber apparatus in Figures 1 and 4, wherein each of the chambers (including the transfer chambers) are kept at a pressure selected based upon the particular process to be performed in the chamber for the purpose of providing a system with increased flexibility (column 1, rows 52 through column 2, row 18; column 4, rows 15-35).

52. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided individual chambers with pressures selected based on the processes to be performed in Okutani, Harrah et al., Matsuura et al., Conte and Schoen et al. in order to provided a system with increased flexibility as taught by Begin et al.

53. Claim **6** is rejected under 35 U.S.C. 103(a) as being unpatentable over Okutani, Harrah et al., Matsuura et al., Conte and Schoen et al. as applied to claims **4, 34-36, 66 and 73** above, and further in view of U.S. Patent No. 3,931,789 to Kakei et al.

54. Okutani, Harrah et al., Matsuura et al., Conte and Schoen et al. disclose the invention substantially as claimed and as described above.

55. However, Okutani, Harrah et al., Matsuura et al., Conte and Schoen et al. fail to teach that said calcining chamber is provided with a mechanism for turning said substrate upside down.

56. Kakei et al. disclose a heating chamber provided with a mechanism for turning a substrate upside down for the purpose of facilitating successive applications of thin film coating on opposite surfaces of substrates (abstract).

57. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a calcining (heating) chamber turning mechanism in Okutani, Harrah et al., Matsuura et al., Conte and Schoen et al. in order to facilitate successive applications of thin film coating on opposite surfaces of substrates as taught by Kakei et al.

58. Claims **7-8, 16-17, 37-39, 45-46, 65, 67, 72 and 74** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,135,608 to Okutani, in view of U.S. Patent No. 4,405,487 to Harrah et al., U.S. Patent No. 6,001,413 to Matsuura et al., U.S. Patent No. 5,310,410 to Begin et al. and U.S. Patent No. 4,322,230 to Schoen et al.

59. Regarding claims 7 and 16: Okutani et al. disclose a film deposition apparatus substantially as claimed in Figures 6 and 35, comprising: a stock chamber (601) for loading or unloading a substrate; a transferring chamber (634) including a mechanism (637) for transferring the substrate; a liquid phase film deposition chamber (614) connected to said transferring chamber through a gate (622); and a calcining chamber (624). The apparatus may be used for depositing material in the liquid phase (column 12, row 66 through column 13, row 10). Further, the liquid phase deposition chamber is provided with a third mechanism (392) for pressurizing with an inert atmosphere; and a fourth mechanism (395) capable of supplying an organic material including solvent, wherein the liquid phase film deposition chamber is capable of being filled with an inert gas during deposition process. With respect to the specific material supplied by the forth mechanism, it is noted that the courts have ruled that Examiner notes that the courts have ruled that expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim. Ex parte Thibault, 164 USPQ 666, 667 (Bd. App. 1969). Also, with respect to an intended use of the apparatus (i.e. a specific type of deposition film produced), it is note that the courts have ruled that claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. In re Danly, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). The courts have further ruled that a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art

apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

60. Although, the liquid phase film deposition chamber of Okutani is not provided with a mechanism for oxidizing an element belonging to Group 1 or 2 of the periodic table. It is noted that Okutani do teach that coatings such as the one deposited in the liquid film deposition chamber may develop defects such as "swelling" or "voids" when exposed to open air comprising water (e.g., see column 20, rows 9-12).

61. Harrah et al. teach the use of a moisture getter comprising a readily oxidizable metal (such as Mg, a Group 2 metal; column 2, row 68) in a closed container for the purpose of scavenging moisture (column 1, rows 11-14).

62. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a mechanism for oxidizing an element belonging to Group 1 or Group 2 of the periodic table in Okutani in order to scavenge moisture within chamber as taught by Harrah et al.

63. Harrah et al. and Okutani disclose the invention substantially as claimed and as described above.

64. However, Harrah et al. and Okutani do not explicitly teach why one of ordinary skill in the art might combine two apparatus that to some may appear to individually provide solutions to a common problem.

65. Matsuura et al. teach that even when substrates are provided in a vacuum enclosure, over time contaminants and impurities may be introduced into the enclosure,

thus causing failure or destabilization of the substrates (column 2, rows 17-35). Therefore, even if at some point in time the apparatus of Okutani is in a "clean" state, over time this state may become diminished. Thus, means for addressing the contaminants and/or impurities besides just providing a clean container at the outset would make sense. Examiner recognizes that the disclosure of Matsuura states that even when substrates are provided in a *vacuum* (i.e. an air tight enclosure) contaminants and impurities may be introduced and points out that if this is the case, even more care would have to be taken in an environment not under vacuum to prevent contaminants and impurities from causing failure or destabilization.

66. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided the apparatus/closed container of Okutani with a mechanism for oxidizing an element belonging Group 1 or 2 of the periodic table in order to scavenge moisture from the chamber that may be introduced after time has lapsed as taught by Harrah et al. and Matsuura et al.

67. Further, with respect to the disclosure of Matsuura et al., Examiner points out that Matsuura et al. teach that this prevention of failure and destabilization is applicable to electroluminescent coatings (see, e.g., abstract).

68. As described above, Okutani, Harrah et al. and Matsuura et al. disclose the invention substantially as claimed.

69. However Okutani, Harrah et al. Matsuura et al. fail to disclose an additional transfer chamber connected through said stock chamber through a gate or a vapor

phase film deposition chamber connected to one of said two transferring chambers through a gate.

70. Begin et al. disclose a multi-chamber apparatus comprising two transfer chambers (14) connected to a stock chamber (26, Figure 4) through a gate (32, Figure 1; 90) and a plurality of vapor deposition chambers/first chambers (38, 40, 42, 80, 82) in an arrangement for the purpose of providing greater flexibility in the types of operations performed (column 2, rows 28-43). Although, both of the transfer chambers are not directly connected to the stock chamber through a single gate, they are connected through a gate.

71. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided an additional transfer chamber and a vapor deposition chamber in Okutani, Harrah et al. and Matsuura et al. in order to achieve an arrangement providing greater flexibility in the types of operations performed as taught by Begin et al.

72. Okutani, Harrah et al. and Matsuura et al. and Begin et al. disclose the invention substantially as claimed and as described above.

73. However, Okutani, Harrah et al., Matsuura et al. and Begin et al. fail to teach mechanism for oxidizing is an oxidation cell having a lid, wherein said oxidation cell is capable of being airtight when said lid is closed and wherein a period of time in which said oxygen getter agent is oxidized is adjusted by opening and closing said lid.

74. Schoen et al. teach providing a gettering material in a cell with a lid such that when said lid is closed said cell is airtight (i.e. hermetic) for the purpose of allowing for storage when the cell is not needed and therefore enabling adjustment of a period of time in which said gettering material is used (column 2, rows 26-30 and column 3, rows 43-51).

75. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided the gettering material in a cell with a lid for opening and closing the cell Okutani, Harrah et al., Matsuura et al. and Begin et al. in order to allow for storage when the cell is not needed and adjustment of a period of time in which said gettering material is used as taught by Schoen et al.

76. With respect to claims 8 and 17, Okutani, Harrah et al., Matsuura et al., Begin et al. and Schoen et al. disclose a stock chamber, a transferring chamber and a liquid phase film deposition chamber provided with a mechanism for oxidizing an element belonging to Group 1 or 2 of the periodic table—as described above.

77. However, Harrah et al., Matsuura et al., Begin et al. and Schoen et al. fail to teach an apparatus wherein an inside of said transferring chamber is kept under a reduced pressure and a liquid phase film deposition chamber is kept under atmospheric pressure or in a pressurized state.

78. Begin et al. further disclose a multi-chamber apparatus in Figures 1 and 4, wherein each of the chambers (including the transfer chambers) are kept at a pressure selected based upon the particular process to be performed in the chamber for the

purpose of providing a system with increased flexibility (column 1, rows 52 through column 2, row 18; column 4, rows 15-35).

79. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided individual chambers with pressures selected based on the processes to be performed in Harrah et al., Matsuura et al., Begin et al. and Schoen et al. in order to provided a system with increased flexibility as taught by Begin et al.

80. With respect to claims 37, 65, 67, 72 and 74, which are drawn solely to an intended use of the apparatus, refer to above rejections for treatment of the specific intended use and materials used during such treatment.

81. With respect to claims 38-39 and 45-46, the liquid phase film deposition chamber of Okutani et al. is a spin coater provided with a nozzle (see, e.g., column 19, rows 24-41). Refer to above rejections for treatment of the specific intended use and materials used during such treatment.

82. Claims **9 and 18** are rejected under 35 U.S.C. 103(a) as being unpatentable over Okutani, Harrah et al., Matsuura et al. Begin et al. and Schoen et al. as applied to claims 7-8, 16-17, 37-39, 45-46, 65, 67, 72 and 74 above, and further in view of U.S. Patent No. 3,931,789 to Kakei et al.

83. Okutani, Harrah et al., Matsuura et al. Begin et al. and Schoen et al.disclose the invention substantially as claimed and as described above.

84. However, Okutani, Harrah et al., Matsuura et al. Begin et al. and Schoen et al. fail to teach that said calcining chamber is provided with a mechanism for turning said substrate upside down.

85. Kakei et al. disclose a heating chamber provided with a mechanism for turning a substrate upside down for the purpose of facilitating successive applications of thin film coating on opposite surfaces of substrates (abstract).

86. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a calcining (heating) chamber turning mechanism in Okutani, Harrah et al., Matsuura et al. Begin et al. and Schoen et al. in order to facilitate successive applications of thin film coating on opposite surfaces of substrates as taught by Kakei et al.

87. Claims **10-11, 40-42, 68 and 75** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,135,608 to Okutani, in view of U.S. Patent No. 4,405,487 to Harrah et al., U.S. Patent No. 6,001,413 to Matsuura et al., U.S. Patent No. 5,310,410 to Begin et al. and U.S. Patent No. 6,149,392 to Conte and U.S. Patent No. 4,322,230 to Schoen et al.

88. Regarding claim 10: Okutani et al. disclose a film deposition apparatus substantially as claimed in Figures 6 and 35, comprising: a stock chamber (601) for loading or unloading a substrate; a transferring chamber (634) including a mechanism (637) for transferring the substrate; a liquid phase film deposition chamber (614) connected to said transferring chamber through a gate (622); and a calcining chamber

(624). The apparatus may be used for depositing material in the liquid phase (column 12, row 66 through column 13, row 10). Further, the liquid phase deposition chamber is provided with a third mechanism (392) for pressurizing with an inert atmosphere; and a fourth mechanism (395) capable of supplying an organic material including solvent, wherein the liquid phase film deposition chamber is capable of being filled with an inert gas during deposition process. With respect to the specific material supplied by the forth mechanism, it is noted that the courts have ruled that Examiner notes that the courts have ruled that expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim. Ex parte Thibault, 164 USPQ 666, 667 (Bd. App. 1969). Also, with respect to an intended use of the apparatus (i.e. a specific type of deposition film produced), it is note that the courts have ruled that claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. In re Danly, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). The courts have further ruled that a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

89. Although, the liquid phase film deposition chamber of Okutani is not provided with a mechanism for oxidizing an element belonging to Group 1 or 2 of the periodic table. It is noted that Okutani do teach that coatings such as the one deposited in the

liquid film deposition chamber may develop defects such as “swelling” or “voids” when exposed to open air comprising water (e.g., see column 20, rows 9-12).

90. Harrah e et al. teach the use of a moisture getter comprising a readily oxidizable metal (such as Mg, a Group 2 metal; column 2, row 68) in a closed container for the purpose of scavenging moisture (column 1, rows 11-14).

91. It would have been obvious to one of ordinary skill in the art at the time the Applicant’s invention was made to have provided a mechanism for oxidizing an element belonging to Group 1 or Group 2 of the periodic table in Okutani in order to scavenge moisture within chamber as taught by Harrah et al.

92. Harrah et al. and Okutani disclose the invention substantially as claimed and as described above.

93. However, Harrah et al. and Okutani do not explicitly teach why one of ordinary skill in the art might combine two apparatus that to some may appear to individually provide solutions to a common problem.

94. Matsuura et al. teach that even when substrates are provided in a vacuum enclosure, over time contaminants and impurities may be introduced into the enclosure, thus causing failure or destabilization of the substrates (column 2, rows 17-35). Therefore, even if at some point in time the apparatus of Okutani is in a “clean” state, over time this state may become diminished. Thus, means for addressing the contaminants and/or impurities besides just providing a clean container at the outset would make sense. Examiner recognizes that the disclosure of Matsuura states that

even when substrates are provided in a *vacuum* (i.e. an air tight enclosure) contaminants and impurities may be introduced and points out that if this is the case, even more care would have to be taken in an environment not under vacuum to prevent contaminants and impurities from causing failure or destabilization.

95. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided the apparatus/closed container of Okutani with a mechanism for oxidizing an element belonging Group 1 or 2 of the periodic table in order to scavenge moisture from the chamber that may be introduced after time has lapsed as taught by Harrah et al. and Matsuura et al.

96. Further, with respect to the disclosure of Matsuura et al., Examiner points out that Matsuura et al. teach that this prevention of failure and destabilization is applicable to electroluminescent coatings (see, e.g., abstract).

97. Okutani, Harrah et al. and Matsuura et al. disclose the invention substantially as claimed and as described above.

98. However, Okutani, Harrah et al. and Matsuura et al. fail to disclose an additional transfer chamber connected through said stock chamber through a gate or a vapor phase film deposition chamber connected to one of said two transferring chambers through a gate.

99. Begin et al. disclose a multi-chamber apparatus comprising two transfer chambers (14) connected to a stock chamber (26, Figure 4) through a gate (32, Figure 1; 90) and a plurality of vapor deposition chambers/first chambers (38, 40, 42, 80, 82) in

an arrangement for the purpose of providing greater flexibility in the types of operations performed (column 2, rows 28-43). Although, both of the transfer chambers are not directly connected to the stock chamber through a single gate, they are connected through a gate.

100. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided an additional transfer chamber and a vapor deposition chamber in Okutani, Harrah et al. and Matsuura et al. in order to achieve an arrangement providing greater flexibility in the types of operations performed as taught by Begin et al.

101. Okutani, Harrah et al., Matsuura et al. and Begin et al. disclose the invention substantially as claimed.

102. However, Okutani, Harrah et al., Matsuura et al. and Begin et al. fail to teach said oxidizing mechanism provided via a piping.

103. Conte discloses multiple chamber and getter (oxidizing mechanism) configurations in Figures 5-7, including a configuration where the getter is connected to the chamber via piping. Conte further discloses that ideally particles of getter material are prevented from moving through the chamber (column 5, rows 51-65).

104. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a getter connected to a chamber via piping Harrah et al. in Okutani, Harrah et al., Matsuura et al. and Begin et al. in order to

prevent particles of getter material from moving through the chamber as taught by Conte.

105. Okutani, Harrah et al., Matsuura et al., Begin et al. and Conte disclose the invention substantially as claimed and as described above.

106. However, Okutani, Harrah et al., Matsuura et al., Begin et al. and Conte et al. fail to teach mechanism for oxidizing is an oxidation cell having a lid, wherein said oxidation cell is capable of being airtight when said lid is closed and wherein a period of time in which said oxygen getter agent is oxidized is adjusted by opening and closing said lid.

107. Schoen et al. teach providing a gettering material in a cell with a lid such that when said lid is closed said cell is airtight (i.e. hermetic) for the purpose of allowing for storage when the cell is not needed and therefore enabling adjustment of a period of time in which said gettering material is used (column 2, rows 26-30 and column 3, rows 43-51).

108. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided the gettering material in a cell with a lid for opening and closing the cell in Okutani, Harrah et al., Matsuura et al., Begin et al. and Conte et al. in order to allow for storage when the cell is not needed and adjustment of a period of time in which said gettering material is used as taught by Schoen et al.

109. With respect to claim 11, Begin et al. disclose a multi-chamber apparatus in Figures 1 and 4, wherein each of the chambers (including the transfer chambers) are

kept at a pressure selected based upon the particular process to be performed in the chamber for the purpose of providing a system with increased flexibility (column 1, rows 52 through column 2, row 18; column 4, rows 15-35).

110. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided individual chambers with pressures selected based on the processes to be performed in order to provide a system with increased flexibility as taught by Begin et al.

111. With respect to claim 40, 68 and 75, which is drawn solely to an intended use of the apparatus, refer to above rejections for treatment of the specific intended use and materials used during such treatment.

112. With respect to claims 41-42, the liquid phase film deposition chamber of Okutani et al. is a spin coater provided with a nozzle (see, e.g., column 19, rows 24-41). Refer to above rejections for treatment of the specific intended use and materials used during such treatment.

113. Claim **12** is rejected under 35 U.S.C. 103(a) as being unpatentable over Okutani, Harrah et al., Matsuura et al., Begin et al., Conte and Schoen et al. as applied to claims 10, 11, 40-42, 68 and 75 above, and further in view of U.S. Patent No. 3,931,789 to Kakei et al.

114. Okutani, Harrah et al., Matsuura et al. Begin et al., Conte and Schoen et al. disclose the invention substantially as claimed and as described above.

115. However, Okutani, Harrah et al., Matsuura et al. Begin et al., Conte and Schoen et al. fail to teach that said calcining chamber is provided with a mechanism for turning said substrate upside down.

116. Kakei et al. disclose a heating chamber provided with a mechanism for turning a substrate upside down for the purpose of facilitating successive applications of thin film coating on opposite surfaces of substrates (abstract).

117. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a calcining (heating) chamber turning mechanism in Okutani, Harrah et al., Matsuura et al. Begin et al., Conte and Schoen et al. in order to facilitate successive applications of thin film coating on opposite surfaces of substrates as taught by Kakei et al.

100. Claims **53 and 57** are rejected under 35 U.S.C. 103(a) as being unpatentable over Okutani, Harrah et al. and Matsuura et al. and Schoen et al. as applied to claims 1, 13, 31-33, 43-44, 59-60, 63-64, 69-71 and 76 above, and further in view of U.S. Patent No. 4,118,542 to Walter.

101. Okutani, Harrah et al. and Matsuura et al. and Schoen et al. disclose the invention substantially as claimed and as described above.

102. However, Okutani, Harrah et al. and Matsuura et al. and Schoen et al. fail to teach a heating mechanism/heater for the oxidization cell.

103. Walter teaches providing a heater/heating mechanism for an oxidization mechanism comprising a getter material for the purpose of allowing the getter material

to become at least partially molten, providing a liquid phase which is effective to preferentially react with any residual reactive oxygen present (column 5, rows 46-53).

104. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a heater/heating mechanism in the prior art of record in order to allow the getter material to become at least partially molten, providing a liquid phase which is effective to preferentially react with any residual reactive oxygen present as taught by Walter.

105. Claim **54** is rejected under 35 U.S.C. 103(a) as being unpatentable over Okutani, Harrah et al., Matsuura et al. and Conte and Schoen et al. as applied to claims 4, 34-36, 66 and 73 above, and further in view of U.S. Patent No. 4,118,542 to Walter.

106. Okutani, Harrah et al., Matsuura et al. Conte and Schoen et al. disclose the invention substantially as claimed and as described above.

107. However, Okutani, Harrah et al., Matsuura et al. and Conte and Schoen et al. fail to teach a heating mechanism/heater for the oxidization cell.

108. Walter teaches providing a heater/heating mechanism for an oxidization mechanism comprising a getter material for the purpose of allowing the getter material to become at least partially molten, providing a liquid phase which is effective to preferentially react with any residual reactive oxygen present (column 5, rows 46-53).

109. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a heater/heating mechanism in the prior art of record in order to allow the getter material to become at least partially

molten, providing a liquid phase which is effective to preferentially react with any residual reactive oxygen present as taught by Walter.

110. Claims **55 and 58** are rejected under 35 U.S.C. 103(a) as being unpatentable over Okutani, Harrah et al., Matsuura et al. and Begin et al. and Schoen et al. as applied to claims 7-8, 16-17, 37-39, 45-46, 65, 67, 72 and 74 above, and further in view of U.S. Patent No. 4,118,542 to Walter.

111. Okutani, Harrah et al., Matsuura et al. and Begin et al. and Schoen et al. disclose the invention substantially as claimed and as described above.

112. However, Okutani, Harrah et al., Matsuura et al. and Schoen et al. fail to teach a heating mechanism/heater for the oxidization cell.

113. Walter teaches providing a heater/heating mechanism for an oxidization mechanism comprising a getter material for the purpose of allowing the getter material to become at least partially molten, providing a liquid phase which is effective to preferentially react with any residual reactive oxygen present (column 5, rows 46-53).

114. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a heater/heating mechanism in the prior art of record in order to allow the getter material to become at least partially molten, providing a liquid phase which is effective to preferentially react with any residual reactive oxygen present as taught by Walter.

115. Claim **56** is rejected under 35 U.S.C. 103(a) as being unpatentable over Okutani, Harrah et al., Matsuura et al., Begin et al., Conte and Schoen et al. as applied to claims 10-11, 40-42, 68 and 75 above, and further in view of U.S. Patent No. 4,118,542 to Walter.

116. Okutani, Harrah et al., Matsuura et al. Begin et al., Conte and Schoen et al. disclose the invention substantially as claimed and as described above.

117. However, Okutani, Harrah et al., Matsuura et al. Begin et al., Conte and Schoen et al. fail to teach a heating mechanism/heater for the oxidization cell.

118. Walter teaches providing a heater/heating mechanism for an oxidization mechanism comprising a getter material for the purpose of allowing the getter material to become at least partially molten, providing a liquid phase which is effective to preferentially react with any residual reactive oxygen present (column 5, rows 46-53).

119. It would have been obvious to one of ordinary skill in the art at the time the Applicant's invention was made to have provided a heater/heating mechanism in the prior art of record in order to allow the getter material to become at least partially molten, providing a liquid phase which is effective to preferentially react with any residual reactive oxygen present as taught by Walter.

***Response to Arguments***

138. Applicant's arguments with respect to the pending claims have been considered but are moot in view of the new ground(s) of rejection, as described above.

139. It is also worth noting: 1) With respect to Applicant's argument regarding the vacuum liquid film deposition methods in Hiraga and Matsuura, Okutani is now relied on for this feature; 2) With respect to Applicant's arguments regarding the combination of two elements for the same purpose, this argument is addressed in the above rejection and has been discussed previously, ad nauseum. Examiner's psotion is clear. It is also note that in a rejection combing the teachings of one or more references, only a single motivation is required. Each of the references need not provide motivation; 3) With respect to Applicant's many arguments based on an intended method performed in the apparatus, as addressed in previous actions, the most recent interview and in the above rejections -- the present claims are apparatus claims, not method claims. The prior art need not be used to perform the same method Applicant intends to use in the claimed apparatus. Thus, arguments based on this intended use are misplaced.

140. Examiner has made a concerted effort to address each of the pending claims individually in the above rejections, although the subject matter is extremely repetitive. If for some reason a claim has not individually addressed, Applicant should refer to rejection of claims comprising similar subject matter.

***Conclusion***

140. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KARLA MOORE whose telephone number is (571)272-1440. The examiner can normally be reached on Monday-Friday, 9:00 am-6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571.272.1435. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Karla Moore/
Primary Examiner, Art Unit 1792